PATENT ABSTRACTS OF JAPAN

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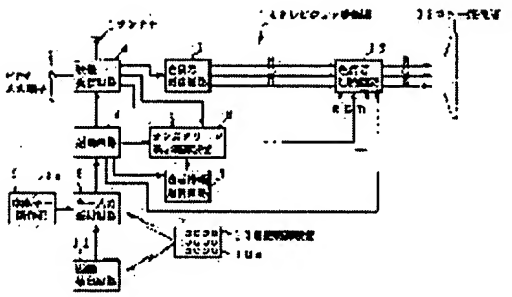
(54) ON-SCREEN DISPLAY DEVICE

(57)Abstract:

PURPOSE: To improve operability by changing-over the picture size of onscreen display into the optimum picture size.



CONSTITUTION: A video signal is displayed on a display screen 13 and also on-screen display is conducted on the screen 13 through the use of an on-screen display controller 6. Distance between input devices 9 and 10 and the display screen 13, that is, operation distance, is detected through the use of a distance detecting circuit 11 and it is supplied to a station selecting circuit 4 with a key input receiving circuit 8 as distance information. The station selecting circuit 4 controls a display information selecting circuit 7 based on distance information and selects a display memory corresponding to operation distance within the plural display memories which are provided in the on-screen display controller 6. Thus, on-screen display by the size or a display position corresponding to operation display is conducted so that operability is improved.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] Drawing 1 is the block diagram showing the 1st example of the onscreen indicating equipment concerning this invention.
[Drawing 2] Drawing 2 is the block diagram showing the configuration of the distance detection means shown in drawing 1 .
[Drawing 3] Drawing 3 is an explanatory view explaining the distance detection means shown in drawing 1 .
[Drawing 4] Drawing 4 is a flow chart which shows the control action of the key input reception circuit shown in drawing 1 .
[Drawing 5] Drawing 5 is drawing showing the visual field to the viewer who performs actuation at the time of using the body key stroke section shown in drawing 1 .
[Drawing 6] Drawing 6 is the block diagram showing the 2nd example of the onscreen indicating equipment concerning this invention.
[Drawing 7] Drawing 7 is an explanatory view explaining the distance detection means shown in drawing 6 .
[Drawing 8] Drawing 8 is the block diagram showing the 3rd example of the onscreen indicating equipment concerning this invention.
[Drawing 9] Drawing 9 is the block diagram showing the onscreen indicating equipment in the former.
[Drawing 10] Drawing 10 is drawing showing change of the visual field to the viewer who performs actuation at the time of using the body key stroke section and remote control which are shown in drawing 9 .
[Description of Notations]
3 [-- An onscreen display control, 7 / -- A display information selection circuitry, 8 / -- A key input reception circuit, 9 / -- The body key stroke section, 10 / -- Remote control, 11 / -- A distance detection means (distance detector), 12 / -- Chrominance-signal change-over circuit.] -- An image receiving circuit, 4 -- A channel selection circuit, 5 -- A chrominance-signal regenerative circuit, 6

[Translation done.]

[0009] In addition, the image receiving circuit 52 generates a horizontal and a perpendicular effective display period signal, and supplies them to the onscreen display control 55 while supplying it to the chrominance-signal regenerative circuit 54 after it amplifies the inputted video signal when a video signal is inputted from the video input terminal 51.
[0010] The key input information from the key input reception circuit 56 is inputted into the channel selection circuit 53, and the channel selection circuit 53 generates the display-control data to the indication signal and the onscreen display control 55 to the image receiving circuit 52 in it based on the inputted key input information. An indication signal is supplied to the image receiving circuit 52, and display-control data are supplied to the onscreen display-control circuit 55. In addition, the display-control data from the channel selection circuit 53 are horizontal [for indicating by onscreen one], and the display address for setting up a vertical display starting position and a vertical display position.
[0011] The key input reception circuit 56 incorporates any of the key input information generated by depression processing of key 57a (refer to drawing 10) of the body key stroke section 57 prepared in the body of a device, or the key input information generated by the depression actuation to key 58a in the keypad prepared in remote control 58 they are, and outputs the incorporated key input information to the channel selection circuit 53. By forming the remote control 58 other than the body key stroke section 57, the information for which a viewer is a free location and it asks can be inputted now.
[0012] while the chrominance-signal regenerative circuit 54 separates and amplifies only a carrier chrominance signal from the inputted video signal, i.e., a composite picture signal, and taking out a color-difference signal from this carrier chrominance signal on the other hand -- red (R) -- green -- it gets over to each chrominance signal of (G) and blue (B), and the chrominance-signal change-over circuit 59 is supplied.
[0013] The onscreen display control 55 generates the indicative data to the specified screen coordinate based on the horizontal effective display period signal from the display-control data and the image receiving circuit 52 from the channel selection circuit 53, and a perpendicular effective display period signal. Furthermore, the onscreen display control 55 has the display memory which is not illustrated, changes an indicative data into each chrominance signal of the red (R) for indicating by onscreen one, green (G), and blue (B), and supplies it to the chrominance-signal change-over circuit 59.
[0014] Each chrominance signal from the chrominance-signal regenerative circuit 54 and each chrominance signal generated with the onscreen display control 55 are supplied to the chrominance-signal change-over circuit 59. or [compounding each chrominance signal from the chrominance-signal regenerative circuit 54, and each chrominance signal from the onscreen display-control signal 55 by the chrominance-signal change-over circuit 59 being controlled by the channel selection circuit 53] -- or the color picture tube 60 is supplied through the R-G-B drive circuit which is not switched and illustrated. The color picture tube 60 is displayed on a screen by making into image information each chrominance signal which drove by the R-G-B drive circuit which is not illustrated, and was supplied from the chrominance-signal change-over circuit 59.
[0015] Next, actuation of the conventional television receiver of such a configuration is explained, referring to drawing 10 . Drawing 10 R> 0 (a) and drawing 10 (b) are the explanatory views showing the visual field of the viewer at the time of operating it using the body key stroke section and remote control of a television receiver which are shown in drawing 9 , respectively, drawing 10 (a) shows the case where remote control is used, and drawing 10 R> 0 (b) shows the case where the body key stroke section is used.
[0016] First, the power source of the television receiver 61 shown in drawing 10 is turned on, and a viewer keys by using the body key stroke section 57 in order to acquire the information on desired. In addition, when a viewer wants to operate channel selection actuation etc. in the location distant from the television receiver 61, remote control 58 is used. Key input information occurs from the body key stroke section 57 or remote control 58, and the channel selection circuit 53 is supplied through the key input reception circuit 56 by this key input. The channel selection circuit 53 supplies the display-control data based on key input information to the onscreen display control 66.
[0017] On the other hand, the television signal which carried out induction to the antenna 50, and the

video signal from the video input terminal 51 are supplied to the image receiving circuit 52, and the image receiving circuit 52 is controlled by the channel selection circuit 53, and chooses one input signal. The image receiving circuit 52 performs detection processing about the television signal from an antenna 50. In this way, the baseband video signal of a channel based on a key input is taken out, and the chrominance-signal regenerative circuit 54 is supplied. Moreover, the perpendicular effective display period signal which shows the effective display period of the horizontal effective display period signal and perpendicularly the horizontal effective display period of the tuned-in video signal is shown is generated, and the onscreen display control 55 is supplied. The video signal from the image receiving circuit 52 is supplied to the chrominance-signal change-over circuit 59, after getting over to each chrominance signal of red (R), green (G), and blue (B) by the chrominance-signal regenerative circuit 54.

[0018] In the onscreen display control 55, the indicative data to the specified screen coordinate is generated based on the horizontal from the image receiving circuit 52 and a perpendicular effective display period signal, and the display-control data from the channel selection circuit 53. This indicative data is changed into each chrominance signal of red (R), green (G), and blue (B), and is supplied to the chrominance-signal change-over circuit 59.

[0019] or [in this way, / each chrominance signal and each chrominance signal for an onscreen display based on an input signal or an external video signal being inputted, and the chrominance-signal change-over circuit 59 being controlled by the channel selection circuit 53, and compounding both in the chrominance-signal change-over circuit 59,] -- or the R-G-B drive circuit which is not switched and illustrated is supplied. Thereby, on the screen of the color picture tube 60, an onscreen indication of the control information by the viewer etc. is given in piles at the image of a desired channel.

[0020] By the way, a viewer shall perform control operation, such as channel modification, using remote control 58. If it does so, onscreen display 61b shown in drawing 10 (a) will be displayed on the predetermined location on screen 61a of a television receiver 61. In this case, since the viewer and the television receiver 61 are comparatively separated, as shown in drawing 10 R> 0 (a), the angle of visibility for screen recognition of the viewer at the time of actuation is comparatively large, for example, the whole television receiver 61 serves as visual field range. If the display size of onscreen display 61b considers as a comparatively large thing, even when the distance between a viewer and screen 61a is large enough, it becomes the display of onscreen display 61b is legible, and possible to recognize the contents of a display easily, and actuation and control while looking at onscreen display 61b can be performed smoothly.

[0021] On the other hand, if a viewer shall perform control operation, such as channel modification, using the body key stroke section 57, onscreen display 61b shown in drawing 10 (b) will be displayed on the predetermined location on screen 61a. That is, in this case, since a viewer will operate it near the screen 61a, the angle of visibility for screen recognition of the viewer at the time of actuation cannot become narrow, and as shown in drawing 10 (b), a part of screen 61a can see it. After all, in this case, a part of onscreen display display 61b will look large to a viewer, and it will be difficult to grasp the contents of an onscreen display.

[0022] That is, when the case where remote control 58 is used, and the body key stroke section 57 are used, a big difference arises in the angle of visibility for screen recognition of the viewer who operates it. When the display size of ONSUKURIN is remote operation, even if it is displayed in the optimal size, since this display size is a fixed size based on an indicative data, it will become difficult for an onscreen display to be too large and to overlook a screen in the actuation by the side of the body of a device. For this reason, there is a problem that the operability by the viewer will fall.

[0023] The television receiver with the screen size of an aspect ratio 9:16 in which high-definition-television-broadcasting reception is possible, a wide aspect television receiver or the projection mold television receiver which makes a big screen possible, etc. has spread broadly with big-screen-izing and wide-izing in recent years. In such a big screen, the alphabetic character by onscreen display also becomes large, and the fall of the operability by difference of an angle of visibility becomes much more remarkable.

[0024] Moreover, like the home theater to which it views and listens by a lot of people, when displaying on a large screen, the viewer who operates it by the body key stroke section 57 can fully recognize the contents of a display, if an onscreen display is performed in the comparatively narrow range near the body key stroke section 57. However, since an onscreen display is performed throughout the predetermined screen location set up beforehand, for example, a screen, it also has the problem that lack of the image information by onscreen display is troublesome, for other viewing and listening which does not need an onscreen display.
[0025]
[Problem(s) to be Solved by the Invention] Since it was indicated by onscreen one with the conventional onscreen display like the above in the size based on the number of pixels fixed irrespective of the magnitude and the actuated valve position of a screen, there was a trouble that operability will fall.
[0026] Moreover, for other viewers other than a viewer, when two or more viewers view and listened, while screen grace deteriorated by unnecessary onscreen display, there was also a trouble that the information on the main image will decrease.
[0027] While this invention raises operability by having been made in view of the above-mentioned trouble, and enabling the switch of the image size of an onscreen display in the optimal image size, it aims at offering the onscreen display which can prevent reduction of image information.
[0028]
[The means for making a technical problem solved] A display means for the onscreen display concerning this invention to perform predetermined image processing to an input video signal, and to display the image based on said input video signal on the display screen, A distance detection means to detect the distance of the input unit for controlling the display of the image by said display means, and said input unit and said display screen, and to output distance information, A screen composition means to pile up and display the onscreen display for displaying the control state by said input unit on said display screen on the image based on said input video signal in the display condition according to said distance information is provided.
[0029]
[Function] In this invention, the display based on a video signal is displayed on the display screen by the display means. an input device -- for example, actuation of channel modification gives on a screen an onscreen indication of the text which shows a channel display with a screen composition means. The distance detection means has detected the distance of an input unit and the display screen, and this distance information is supplied to a screen composition means. A screen composition means performs an onscreen display in the state of the display according to distance information. Thereby, if for example, actuation distance becomes short, the onscreen display of small size will be performed and an onscreen display will be optimized.
[0030]
[Example] An example is explained with reference to a drawing.
[0031] Drawing 1 thru/or drawing 5 show the 1st example of the onscreen display concerning this invention. The block diagram in which drawing 1 shows the television receiver with which the onscreen indicating equipment was incorporated, The block diagram showing the configuration of a distance detection means by which drawing 2 was used for drawing 1 , the explanatory view in which drawing 3 explains the distance detection means of drawing 2 , The flow chart which drawing 4 explains the actuation shown in drawing 1 , and shows the control action by the key input reception circuit, and drawing 5 are the explanatory views showing the visual field of the viewer at the time of performing device actuation by the onscreen up one using the body key stroke section shown in drawing 1 .
[0032] As shown in drawing 1 , the video signal inputted from the television signal and the video input terminal 2 which were received with the antenna 1 is supplied to the image receiving circuit 3. Although illustration is not carried out, it consists of a change-over switch, a tuner, an intermediate frequency amplifying circuit, an image detection amplifying circuit, an image amplifying circuit, etc., and the image receiving circuit 3 is specified as the channel selection circuit 4, and chooses and amplifies one side with the baseband video signal inputted from the high frequency television RF signal received by

the antenna 1, and the video input terminal 2.
[0033] After the image receiving circuit's 3 being controlled by the channel selection circuit 4, tuning in the signal of the predetermined channel of the RF signals and changing into an intermediate frequency signal, While supplying a baseband video signal to the chrominance-signal regenerative circuit 5 by amplifying using an intermediate frequency amplifying circuit (not shown), and performing detection processing after that The perpendicular effective display period signal which shows the effective display period of the horizontal effective display period signal and perpendicularly the horizontal effective display period is shown is generated, and the onscreen display control 6 is supplied.
[0034] The key input information from the key input reception circuit 8 is inputted into the channel selection circuit 4, and the channel selection circuit 4 supplies display-control data to the onscreen display control 6 at the same time it generates the display-control data to the indication signal and the onscreen display control 6 to the image receiving circuit 3 based on the inputted key input information and supplies said indication signal to the image receiving circuit 3. In addition, display-control data are horizontal and the signal which shows the display address which sets up a vertical display starting position and a vertical display position for indicating by onscreen one.
[0035] The video signal taken out by the image receiving circuit 3 is supplied to the chrominance-signal regenerative circuit 5. It gets over to each chrominance signal of red (R), green (G), and blue (B), and this chrominance-signal regenerative circuit 5 is supplied to the chrominance-signal change-over circuit 12 while it separates and amplifies only a carrier chrominance signal from the inputted video signal, i.e., a composite picture signal, and changes this carrier chrominance signal into a color-difference signal.
[0036] Each chrominance signal for [which is generated with each chrominance signal and the onscreen display control 6 mentioned later from the chrominance-signal regenerative circuit 5] indicating by onscreen one is supplied to the chrominance-signal change-over circuit 12. or [that the chrominance-signal change-over circuit 12 compounds each chrominance signal from the chrominance-signal regenerative circuit 5, and each chrominance signal from the onscreen display control 6 based on control of the channel selection circuit 4] -- or the color picture tube 13 is supplied through the R-G-B drive circuit which is not switched and illustrated. The color picture tube 13 is displayed on a screen by driving by the R-G-B drive circuit which is not illustrated by making into image information each chrominance signal supplied from the chrominance-signal change-over circuit 59.
[0037] On the other hand, said key input reception circuit 8 incorporates any of the key input information generated by depression processing of key 9a (refer to drawing 5) of the body key stroke section 9 prepared in the body of a device, or the key input information generated by the depression actuation to key 10a in the keypad prepared in remote control 10 they are, and outputs this key input information to the channel selection circuit 4. The output of the distance detector 11 is also given to the key input reception circuit 8 in this example.
[0038] Drawing 2 is the block diagram showing concretely the distance detector 11 in drawing 1 , and the configuration of remote control 10.
[0039] As shown in the block diagram of drawing 2 , if depression actuation of keypad 10a is detected, control signal output unit 10b of remote control 10 will generate the key input information corresponding to keypad 10a, and will give it to output component 10c. Output component 10c changes key input information into infrared light, and it carries out outgoing radiation as a remote control signal. This remote control signal is inputted also into the distance detector 11 while it is inputted into the key input reception circuit 8 established in TV14.
[0040] Receiving component 11a which receives the remote control signal which emitted light from output component 10c of remote control 10 is prepared in the distance detector 11, and after the remote control signal received by this remote control receiving component 11a is decoded by the decoder which is not illustrated, it is supplied to receiving level detecting circuit 11b.
[0041] Receiving level detecting circuit 11b detects receiving level from the inputted signal. As shown in drawing 3 , it is the actuation distance of receiving component 11a of TV14, and remote control 10 l1 Or l2 It carries out (l1 <l2).
[0042] In this case, the receiving level respectively detected by receiving detecting circuit 11b becomes

> (receiving level in the actuation distance l1) (receiving level in the actuation distance l2), and receiving level and actuation distance have predetermined relation. Receiving level detecting circuit 11b changes the detected receiving level into the distance information according to the distance of remote control 10 and TV14 using this relation, and outputs it as a distance detection value. Distance information, such as this distance detection value, is supplied to the key input reception circuit 8 shown in drawing 1 .

[0043] In the remote-control actuation by remote control 10, the key input reception circuit 8 also incorporates the distance information acquired by coincidence by the distance detector 11 as a distance detection means, and is supplied to the channel selection circuit 4. Moreover, the key input reception circuit 8 has a discernment means to output the recognition signal which shows actuation by the actuation by the body key stroke section 9, or remote control 10, and supplies a recognition signal to the channel selection circuit 4 with said key input information.

[0044] Based on key input information, the channel selection circuit 4 generates the display-control data of an onscreen **** sake, and supplies them to the onscreen display 6. In this example, the channel selection circuit 4 generates the control signal for changing the display condition of an onscreen display based on distance information, and supplies it to the display information selection circuitry 7. Moreover, the channel selection circuit 4 also generates the change-over control signal for controlling composition of the R-G-B signal by said chrominance-signal change-over circuit 12, or a change, and is supplied to the chrominance-signal change-over circuit 12. In addition, a control signal controls the selection actuation by the display information selection circuitry 7.

[0045] The onscreen display control 6 generates the indicative data to the specified screen coordinate based on the horizontal effective display period signal and perpendicular display shelf-life signal from the display-control data and the image receiving circuit 3 from the channel selection circuit 4, changes this indicative data into each chrominance signal of the red (R) for indicating by onscreen one, green (G), and blue (B), and supplies it to the chrominance-signal change-over circuit 12. In this example, two or more display memory (not shown) is prepared in the onscreen display control 6 to one indicative data. The display information from which a display size or a display position of an onscreen display etc. differs is beforehand memorized by such display memory.

[0046] Such display memory is chosen by the display information selection circuitry 7. That is, the display information selection circuitry 7 outputs the signal for choosing one of two or more display memory based on the control signal from the channel selection circuit 4. The onscreen display control 6 chooses the display memory specified by the display information selection circuitry 7 among two or more display memory based on an indicative data, using the selected display memory, changes an indicative data into each chrominance signal of red (R), green (G), and blue (B), and supplies it to the chrominance-signal change-over circuit 12.

[0047] For example, when actuation is performed using remote control 10, the display memory for displaying by the optimal onscreen display size according to a viewer's actuated valve position can be used for the onscreen display control 6. In addition, two or more display memory (not shown) stores the indicative data of the onscreen **** sake according to distance information, and also may store an onscreen indicative data which corresponds, for example to the magnitude of a screen.

[0048] Next, actuation of the onscreen display constituted in this way is explained, referring to drawing 4 .

[0049] The control action of the key input reception circuit 8 (refer to drawing 1) is started by power-source ON of a television receiver. As shown in drawing 4 , at step S1, key input actuation of a viewer is performed using the body key stroke section 9 or remote control 10 (refer to drawing 1) of a television receiver, and the key input information inputted by this key input actuation is supplied to the channel selection circuit 4 (refer to drawing 1). Thereby, the usual processing of the channel channel selection based on key input information etc. is performed.

[0050] At the following step S2, it judges whether there is any onscreen display-processing actuation. That is, it judges whether according to the contents of control based on key input information, it indicates by onscreen one. When the contents of control based on key input information need onscreen

display processing, it progresses to step S3, and when that is not right, it progresses to step S11. At step S11, it judges whether key input processing is ended. In performing a post process at step S13 in ending key input processing, that is, ending the processing based on key input information and not ending on the other hand, it processes others at step S12, and it feeds back to step S1 after that.

[0051] In performing onscreen display processing, in the following step S3, it judges whether it is remote control by the actuation control by the body key stroke section 9 prepared in the body of a device, or remote control 10. In the case of remote control, it progresses at step S4, and when that is not right, it progresses to step S9. In step S4, with a distance detection means, the receiving level of the outgoing radiation signal of remote control 10 (refer to drawing 2) is detected, the distance information (distance detection value) according to this receiving level is outputted, and it progresses to step S5.

[0052] At step S5, it recognizes what [m] the actuated-valve-position distance l of the remote control 10 to TV14 is concretely from the distance information acquired by step S4. And it judges whether this actuated-valve-position distance l belongs to which range L of three range L=0-A [m] and L=A-B [m], and L=B-C [m]. When it judges with that whose actuated-valve-position distance l is range L=0-A [m], it progresses to step S6, when it judges with what is range L=A-B [m], it progresses to step S7, and when it judges with what is range L=B-C [m], it progresses to step S8.

[0053] At steps S6-S8, the data corresponding to each range are supplied to the channel selection circuit 4. In the following step S10, the channel selection circuit 4 generates the control signal for choosing display memory based on the inputted data, and supplies it to the display information selection circuitry 7. Thereby, the display information selection circuitry 7 chooses one display memory in two or more display memory prepared in the onscreen display 6.

[0054] For example, the onscreen indicating equipment 6 shall have three display memory to one indicative data, and such three display memory shall be for displaying the character which is three from which size differs to one indicative data, respectively. that that is right, then step S5 from -- step S6 When it shifts (i.e., when judged with what is range L=0-A [m]), the display information selection circuitry 7 chooses the memory for displaying the character of the minimum size of the three display memory. On the contrary, when judged with what is range L=B-C [m], the display information selection circuitry 7 chooses the display memory for displaying the character of the maximum size. Thus, each chrominance signal of the red (R) from display memory, green (G), and blue (B) is for performing the onscreen display of the size according to the predetermined actuation distance L. In addition, when three display memory for displaying the character which is three from which a display position differs to one indicative data is prepared, it is clear that the display position of an onscreen display changes according to the actuation distance L.

[0055] the red (R) from the onscreen display control 6 -- green -- or [being compounded by each signal based on the main image by supplying each chrominance signal of (G) and blue (B) to the chrominance-signal change-over circuit 12] -- or it is switched and the color picture tubing 13 is supplied. In this way, on the screen of the color picture tubing 13, the onscreen display of the optimal display screen size according to the actuation distance l when a viewer does actuation control of the onscreen display using remote control 10 is performed.

[0056] On the other hand, in step S3, when judged as what is not remote control using remote control 10, it will progress to step S9. That is, in this case, since the viewer is performing actuation control of an onscreen display using the body key stroke section 9 (refer to drawing 1) of the body of a device, the actuation distance l is judged to be about 0m.

[0057] In step S9, the data based on this range are supplied to the channel selection circuit 4 as L= 0m of actuation range, and it progresses to step S10.

[0058] The same actuation as the above is performed at step S10. In this case, on the screen of the color picture tubing 13, as shown in drawing 5 , when the viewer is located near the screen, a display is performed with the minimum screen size as the optimal screen size, i.e., onscreen display 14b.

[0059] Therefore, since onscreen display 14b can be easily recognized when screen 14a of TV14 which can recognize onscreen display 14b easily when a viewer operates an onscreen display using the body key stroke section 9, and is shown in drawing 2 is a big screen, improvement in operability can be aimed

at as a result.

[0060] Thus, when actuation of a viewer performs an onscreen display, while detecting whether actuation of a viewer was performed by the body key stroke section of the body of a device, or it was performed by remote control according to this example, the distance of a viewer and a screen is detected and size or a location of an onscreen display displayed on a screen is optimized based on this distance information. Since an onscreen display legible irrespective of an actuated valve position is obtained by this even if it is a big screen, operability improves remarkably.

[0061] Moreover, since an onscreen display is displayed with the minimum screen size when it is operated using the body key stroke section, when viewing and listening by a lot of people using big screens, such as a screen, what the viewer who indicates it unnecessary by onscreen one senses troublesome by lack of image information can be prevented.

[0062] In addition, in this example, although the example which prepared two or more display memory which embraced actuation distance etc. in the onscreen display control was explained, you may constitute so that a channel selection circuit may have such display memory.

[0063] Moreover, you may make it adjust automatically so that you may constitute so that the brightness of the display of an onscreen display may be automatically changed in this control according to actuation distance, although the example to which the size of an onscreen display or a display position is changed, corresponding to actuation distance at this example was explained, for example, it may become about brightness when the display size of an onscreen display is small, and it may become bright about brightness, when a display size is large darkly.

[0064] In addition, in this example, although the predetermined range L set up beforehand was classified into three and constituted, in order to change the size of an onscreen display etc. for example more effectively and the optimal, you may constitute so that the predetermined range L may be classified or more into four. Moreover, when actuation distance has been recognized to be Om at steps S5 and S6, you may make it output the data assumed to be actuation by the body key stroke section 9 (to refer to drawing 1).

[0065] Drawing 6 and drawing 7 are the block diagrams showing an example at the time of the 2nd example of the onscreen display concerning this invention being shown, for example, improving the distance detection approach in a distance detection means.

[0066] In addition, in this example, about other circuitry of a distance detection means, while being the same as that of the 1st example of drawing 1 and attaching a same sign in the same component, explanation is omitted and only a different part is explained. As for this example, only the configuration of remote control and a distance detector differs from the 1st example.

[0067] As shown in drawing 6 , remote control 15 has 15d of receiving components which detect the signal with which it was reflected by reflective object 11c as a reflective means, and the distance detecting signal which carried out outgoing radiation to oscillation component 15c which generates a distance detecting signal has returned. Reflective object 11c is arranged in the front face of TV14. Remote control 15 has time difference detector 15e for time amount until the signal which carried out outgoing radiation reflects and returns from signal generating circuit 15b by reflective object 11c. Time difference detector 15e generates the time difference information according to the detected time difference, and supplies this time difference information to a control signal and distance signal output unit 15b.

[0068] A control signal and distance signal output unit 15b carry out remote control signal (control signal) dispatch using 15f of dispatch components to the TV14 side while generating a signal using dispatch component 15c. Moreover, the key input information by keypad 15a shown in drawing 5 is inputted, a control signal and distance signal output unit 15b generate a control signal based on this inputted key input information, when it is the usual remote control, and it makes this control signal send towards the TV14 side of the body of a device using 15f of dispatch components. Moreover, while directing it to make a signal send to dispatch component 15c, the control signal based on the time difference information from time difference detector 15e is generated to a case, and this control signal is made to send to it towards the TV14 side using 15f of dispatch components by performing an onscreen

display based on key input information.
[0069] A distance detection means 11 to, have receiving component 11a which receives the control signal from remote control 15 to the TV14 side on the other hand is established. Distance signal detector 11b which detects the distance detection value as distance information (time difference information) from the control signal received by receiving component 11a is also prepared in the distance detection means 11.
[0070] Distance l3 to the remote control [as opposed to / as shown, for example in drawing 7 , when remote control of an onscreen display is performed using remote control 15 according to the distance detection means of such a configuration, use the dispatch components 15c and 15d of remote control 15, and time difference detector 15e, and / TV14] 15 The shown time difference information is detected. Furthermore, this time difference information is changed into distance information by said control signal output unit 15b, and the control signal based on this distance information is sent to the TV14 side using 15f of dispatch components.
[0071] It is received in receiving component 11a by the side of TV14, and this sent control signal (remote control signal) can detect the distance detection value as distance information (time difference information) by distance signal detector 11b based on this input signal. That is, actuation distance l3 of the remote control 15 shown in drawing 7 It can detect as distance information.
[0072] Therefore, by performing the same control action as drawing 4 based on the distance information acquired by the distance detection means like the 1st example in the case of this example, it is possible to switch the onscreen display based on actuation of a viewer to the optimal screen size according to the distance of an operator and a screen, and the same effectiveness as the 1st example can be acquired.
[0073] In addition, the thing which detects receiving level and judges distance with this detected receiving level as a distance detection means in the example in this invention, Or although what the reflective object of TV is reflected using a distance detecting signal, detects time difference information, and computes distance from this detected time difference information was explained It is not limited to this, but as long as it acquires the distance information over TV of remote control, the distance detection means of what kind of method may consist of this inventions.
[0074] Drawing 8 is the block diagram showing the 3rd example of the onscreen indicating equipment concerning this invention. In drawing 8 , the same sign is given to the same component as drawing 1 , and explanation is omitted.
[0075] While this example deletes the display information selection circuitry 7, the point which replaced with the channel selection circuit 4 and the onscreen display control 6, respectively, and adopted the channel selection circuit 44 and the onscreen display control 66 differs from the example of drawing 1 . The onscreen display control 66 has one kind of display memory to one indicative data. In this example, the onscreen display control 66 makes it possible to display the onscreen display of magnitude based on a display clock on a screen by specifying the address of display memory based on the display clock from the clock generation circuit which is not illustrated.
[0076] The channel selection circuit 44 will change the frequency of the display clock supplied to the onscreen display control 66 by outputting the display clock adjustable indication signal based on this distance information, if the distance information based on actuation distance is given from the key input reception circuit 8. Furthermore, the channel selection circuit 44 creates the display starting position indication signal for directing the display starting position of an onscreen display based on distance information, and outputs it to the onscreen display control 66. The onscreen display control 66 determines the location on the screen of an onscreen display by starting read-out of display memory based on a display starting position indication signal.
[0077] Thus, in the constituted example, the channel selection circuit 44 generates a display clock adjustable indication signal and a display starting position indication signal based on distance information, and outputs them to the onscreen display control 66. Thereby, the frequency of the display clock supplied to the onscreen display control 66 changes based on distance information. Change of a display clock frequency also changes the display size of an onscreen display. For example, when a display clock frequency is made high, it receives horizontally, and when the display size of an onscreen

display becomes small and a display clock frequency is conversely made low, the display size of an onscreen display is extended oblong and becomes large.
[0078] Moreover, the onscreen display control 66 changes the display starting position which performs an onscreen display based on a display starting position indication signal. Thereby, an onscreen display is moved and displayed on the display position based on distance information.
[0079] Other operations are the same as that of the example of drawing 1 .
[0080] Thus, in this example, the same effectiveness as the example of drawing 1 can be acquired. Furthermore, in this example, by changing a display clock, the size of an onscreen display is changed and, unlike the 1st example, a display size can be changed continuously. That is, a key input reception circuit gives a distance detection result to a channel selection circuit as it is in this case, without judging to any of the actuation range L actuation distance corresponds. A channel selection circuit is made to correspond to a distance detection result, and should just output the display clock adjustable indication signal for changing a display clock continuously. It is clear by similarly, making it correspond to a distance detection result, and outputting the display starting position indication signal for changing a display position continuously that the display position of an onscreen display can be changed continuously.
[0081]
[Effect of the Invention] A distance detection means according to this invention to detect the distance of an input unit and the display screen and to output distance information as stated above, The screen composition means displayed in the state of the display according to said distance information of the onscreen display for displaying the control state by the input unit on the display screen, While being able to enable the switch of the image size of an onscreen display in the optimal image size and raising operability from ****(ing), it has the effectiveness that reduction of image information can be prevented.

[Translation done.]

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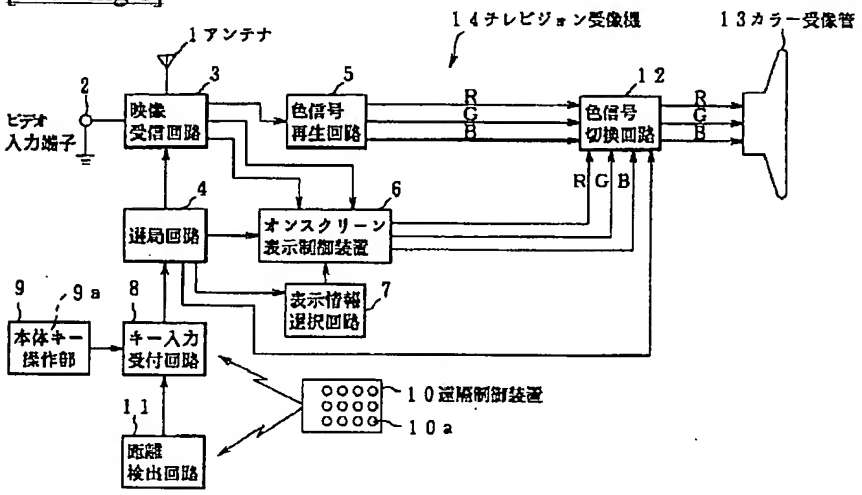
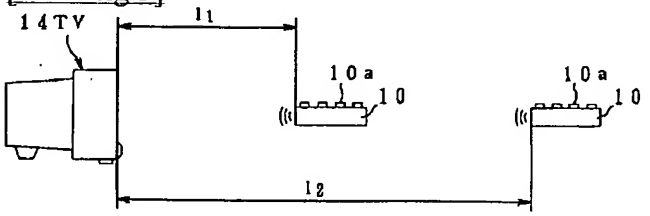
DRAWINGS

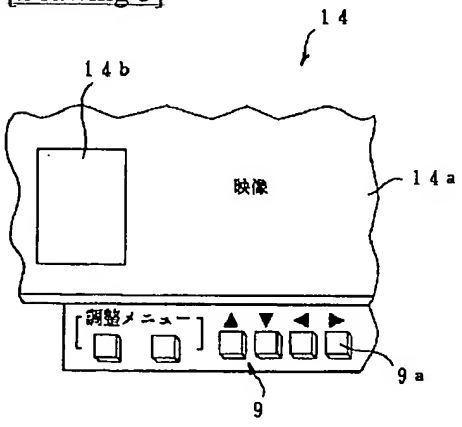
[Drawing 1]



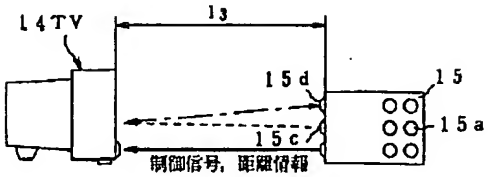
[Drawing 3]



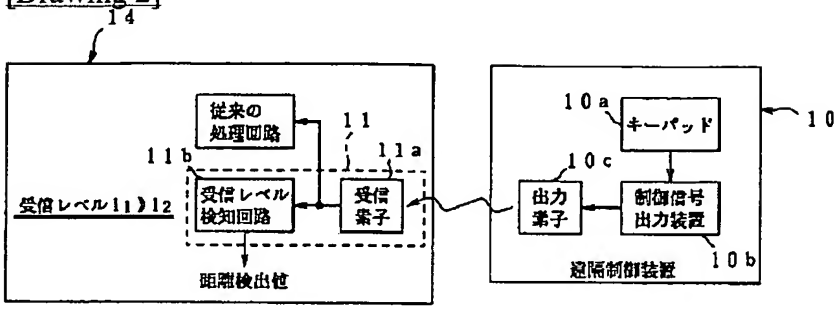
[Drawing 5]



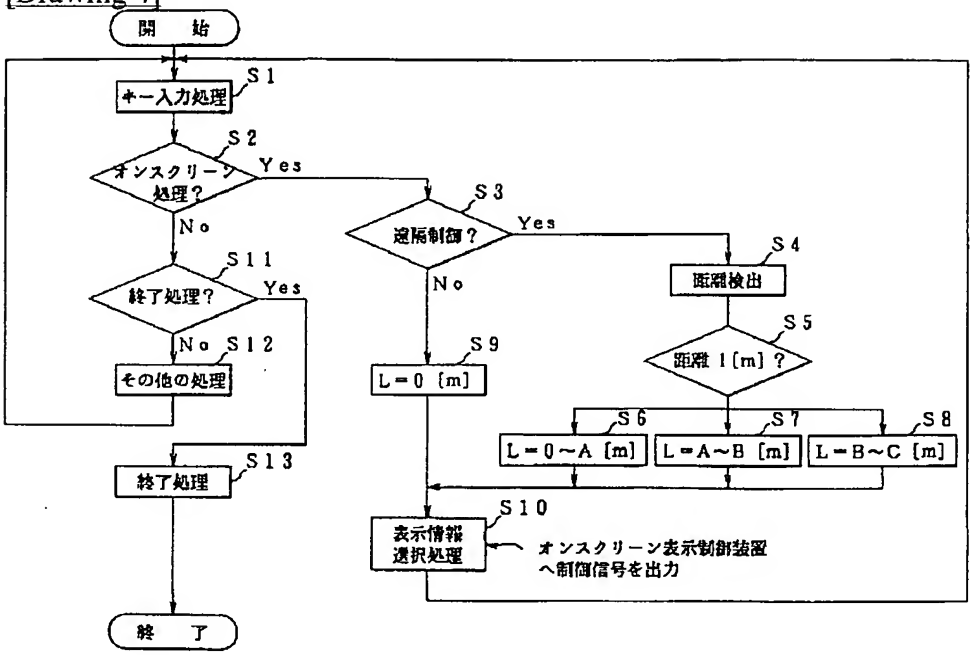
[Drawing 7]



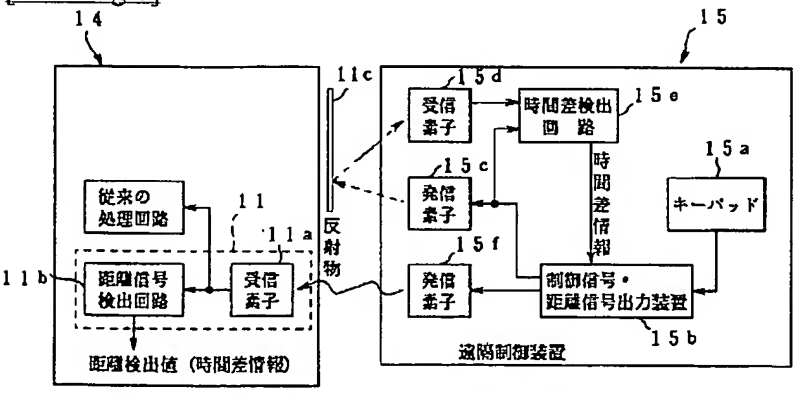
[Drawing 2]



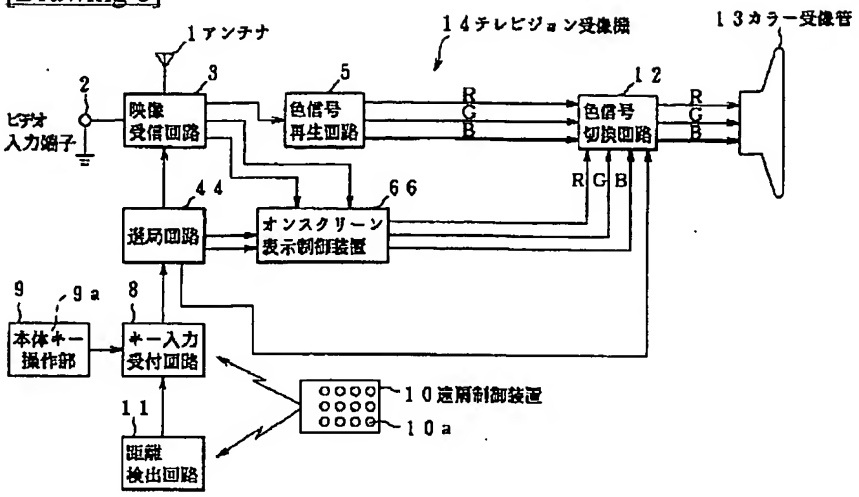
[Drawing 4]



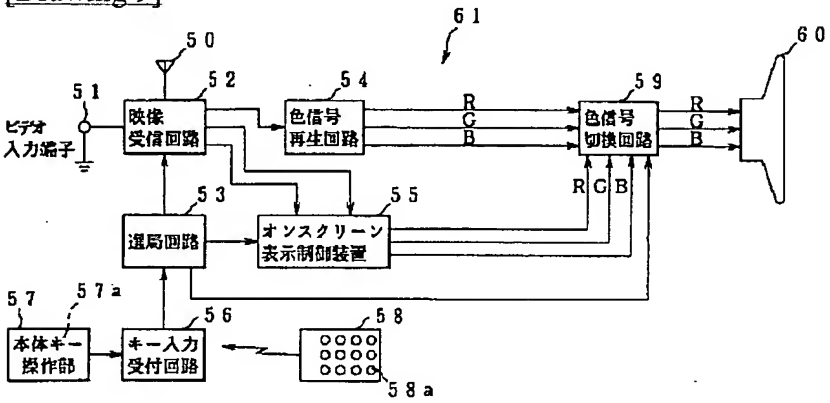
[Drawing 6]



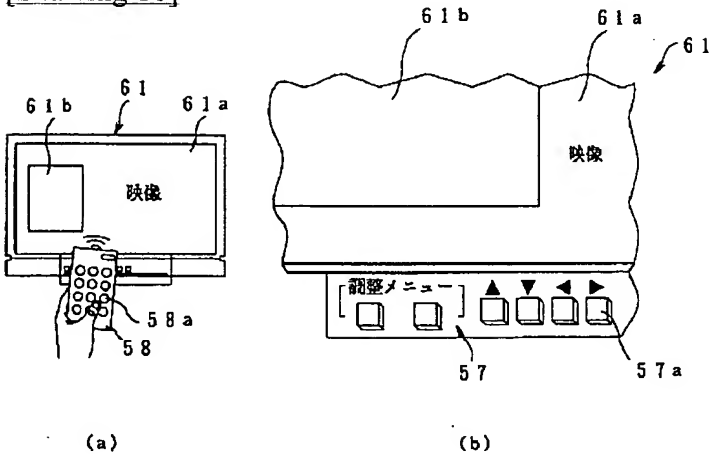
[Drawing 8]



[Drawing 9]



[Drawing 10]



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CLAIMS

[Claim(s)]
[Claim 1] A display means to perform predetermined image processing to an input video signal, and to display the image based on said input video signal on the display screen, A distance detection means to detect the distance of the input unit for controlling the display of the image by said display means, and said input unit and said display screen, and to output distance information, The onscreen display characterized by providing a screen composition means to pile up and display the onscreen display for displaying the control state by said input unit on said display screen on the image based on said input video signal in the display condition according to said distance information.
[Claim 2] Said screen composition means is an onscreen display according to claim 1 characterized by changing the display clock which controls read-out to the display memory for said onscreen display based on said distance information.
[Claim 3] Said screen composition means is an onscreen display according to claim 1 characterized by providing two or more display memory for displaying the onscreen display for displaying the control state by actuation of said input unit in the state of two or more displays, and a selection means to choose one of said two or more display memory based on said distance information.
[Claim 4] Said two or more display memory is onscreen displays according to claim 3 characterized by having memorized the information for changing at least one of a display size and the display positions, and displaying the onscreen display for displaying the control state by actuation of said input unit.
[Claim 5] Said screen composition means is an onscreen display according to claim 4 characterized by classifying the distance of said input unit and said display screen into two or more distance information that it changes gradually, and choosing one of said display memory.
[Claim 6] It is the onscreen display according to claim 1 which said input unit has the control unit and remote-control control unit which were prepared in said display means, and is characterized by performing distance detection of a different approach based on whether said distance detection means is actuation by the control unit prepared in said display means, or it is actuation by said remote-control control unit.
[Claim 7] Said distance detection means is an onscreen display according to claim 1 characterized by detecting said distance information based on the receiving level of the information for controlling the display of the image from said input device.
[Claim 8] Said distance detection means is an onscreen display according to claim 1 characterized by detecting said distance information based on the time of concentration of the information for controlling the display of the image from said input unit.

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